

CLAIMS

What is claimed is:

- 1 1. An apparatus comprising:
2 a decoder to decode a plurality of data streams, said decoder having a
3 state associated with each of said data streams; and
1 state restoration logic to restore said decoder's state upon switching from
2 decoding one data stream to another data stream.
- 1 2. The apparatus as in claim 1 wherein said state restoration logic
2 comprises:
3 one or more memory arrays for storing said states associated with each of
4 said data streams.
- 1 3. The apparatus as in claim 2 having a memory arrays equal in number
2 to said plurality of data streams decoded by said decoder.
- 1 4. The apparatus as in claim 1 wherein said decoder is a Viterbi
2 decoder.
- 1 5. The apparatus as in claim 1 wherein said states associated with each
2 of said data streams may be described by a trellis diagram.
- 1 6. The apparatus as in claim 5 wherein said states associated with each
2 of said data streams are comprised of survivor path data.

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1 7. The apparatus as in claim 2 wherein said array is a forward-tracing
2 decode array.

1 8. The apparatus as in claim 1 wherein each of said data streams
2 comprises multimedia data transmitted from a satellite transponder.

1 9. The apparatus as in claim 2 wherein said state restoration logic
2 further comprises:
3 an accumulator buffer for temporarily storing accumulator values
4 associated with each of said data streams, said accumulator values representing
5 path metric values and being readable from said accumulator buffer to restore
6 said state.

1 10. A method for concurrently decoding a plurality of data streams
2 comprising:
3 decoding a first portion of a first data stream in said plurality, said first
4 data stream having a state associated therewith following said decoding of said
5 first portion;
6 decoding portions of other data streams in said plurality;
7 restoring said state associated with said first data stream; and
8 decoding a second portion of said first data stream.

1 11. The method as in claim 10 wherein each of said plurality of data
2 streams has a memory array associated therewith, said memory arrays storing
3 states associated with each of said data streams, and

4 wherein restoring said state associated with said first data stream
5 comprises switching to processing data through said memory array associated
6 with said first state.

1 12. The method as in claim 10 wherein decoding comprises Viterbi
2 decoding and said state comprises survivor path data associated with said
3 Viterbi decoding.

1 13. The method as in claim 12 wherein said state further comprises a
2 plurality of path metric values.

1 14. An apparatus comprising:
2 a plurality of data arrays for storing survivor path data for a plurality of
3 data streams;
4 a buffer for storing a plurality of path metric values associated with each of
5 said data streams; and
6 state restoration logic for selecting a particular data array and a particular
7 set of path metric values associated with a particular data stream upon receiving
8 a signal indicating a switch to decoding said particular data stream.

1 15. The apparatus as in claim 14 wherein said data arrays are forward
2 tracing arrays.

1 16. The apparatus as in claim 15 wherein decoding comprises Viterbi
2 decoding and said path metric values and said survivor path data are associated
3 with a Viterbi trellis.

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1 17. The apparatus as in claim 14 wherein said indication of a switch from
2 decoding one stream to another occurs are regular periodic intervals.

1 18. A machine-readable medium having code stored thereon which
2 defines an integrated circuit (IC), said IC comprising:

3 a decoder to decode a plurality of data streams, said decoder having a
4 state associated with each of said data streams;

1 state restoration logic to restore said decoder's state upon switching from
2 decoding one data stream to another data stream.

1 19. The machine-readable medium as in claim 18 wherein said IC further
2 comprises:

3 one or more memory arrays for storing said states associated with each of
4 said data streams.

1 20. The machine-readable medium as in claim 19 wherein said memory
2 arrays are equal in number to said plurality of data streams decoded by said
3 decoder.

1 21. The machine-readable medium as in claim 20 wherein said decoder is
2 a Viterbi decoder.

1 22. The machine-readable medium as in claim 20 wherein said states
2 associated with each of said data streams may be described by a trellis diagram.

1 23. The machine-readable medium as in claim 22 wherein said states
2 associated with each of said data streams are comprised of survivor path data.

1 24. The machine-readable medium as in claim 21 wherein said array is a
2 forward-tracing decode array.

1 25. The machine-readable medium as in claim 20 wherein each of said
2 data streams comprises multimedia data transmitted from a satellite
3 transponder.

1 26. The machine-readable medium as in claim 21 wherein said state
2 restoration logic further comprises:
3 an accumulator buffer for temporarily storing accumulator values
4 associated with each of said data streams, said accumulator values representing
5 path metric values and being readable from said accumulator buffer to restore
6 said state.